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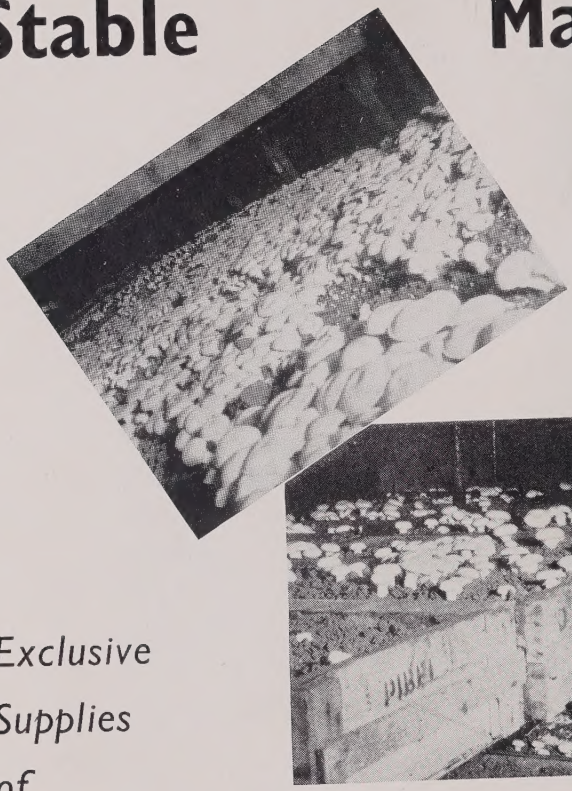

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EDITORIAL

YOU MADE THIS POSSIBLE

Were you one of the thousands of visitors to the British Food Fair at Olympia who saw and admired mushrooms on the NFU Stand? Did you happen to drop in at one of the cookery demonstrations given by the British Electrical Development Association, also at the Food Fair, and did it just happen when mushrooms were part of the demonstration? Did you see that board, one on each stand, mentioning the Mushroom Growers' Association? I know most of you are busy around 12.30 p.m. each day but did you happen to listen to the B.B.C's " Farm Fare " programme the other Wednesday and prick up your ears when the discussion turned to mushrooms? There were mushrooms too on that horticultural produce pyramid float in the " Country Show " programme in connection with the Radio Show at Earls Court, on Friday, 31st August. If you live up North you may, possibly, have seen the television programme (on 23rd August) in which Evelyn Rose, a well-known Northern woman journalist, demonstrated the use of fresh mushrooms in a salad.

Be honest now! Did you, even for one fleeting moment, connect any of these things with the work, in front and behind the scenes, of the MGA Publicity Sub-Committee?

Well, in each and every case it was the work of your publicity people. It was the farm walk at Oxted, attended by so many women journalists, which led to the " Farm Fare " programme. Evelyn Rose tasted raw mushrooms in salad at Oxted and, low and behold, a new avenue for the use of mushrooms, important but little explored, has been opened up.

You wouldn't know about the rush to get mushrooms to the Manchester television studio in time, or of the arrangements which had to be made to be quite certain that *fresh* mushrooms were on show at Olympia every day.

All these publicity successes have been worked for and each and every one would not have been possible if you, all of you with the exception of a very few, hadn't responded so magnificently to that appeal for " 2d., on every carton " for publicity. Those contributions, via the spawn distributors, have been the very life blood of the publicity campaign so far. Keep it up then.

WRA

This picture, taken at the rear of the houses, gives an excellent view of the general layout at Noble Mushrooms Ltd. In the foreground is the Managing Director, Ben Noble, talking to the MGA Secretary and Bulletin Editor.

MY WAY OF GROWING . . .

NOBLE MUSHROOMS LTD.

Nothing Secret about Synthetic Compost

In spite of the obvious success which a few growers are having with synthetic compost, only a small number in this country have taken to this substitute for horse manure. Of those that have, two farms are situated within a stone's throw of each other at Yaxley, near Peterborough.

One of them, Noble Mushrooms Ltd., is one of the best known farms in Europe. Its neighbour, Snowcap Mushrooms, younger by many years, has not had a single delivery of horse manure since the farm commenced operations in 1951.

Chairman and Technical Director of Noble Mushrooms Ltd. is Fred. C. Atkins, that doughty exponent of the theory and practice of commercial mushroom growing.

First mushrooms were picked on this farm on Christmas Day, 1937, and since that time the concern has never looked back. Indeed to-day its production per sq. ft. per year on the shelf system is probably unrivalled on any other farm, for a steady 2½ lb. per sq. ft. three times per year is its proud record for several years past, and now it is being stepped up by maintaining the average per sq. ft. but cropping three and a half times yearly.

The firm takes its name from Benjamin A. Noble, Managing Director of Noble Mushrooms Ltd., who has been associated with mushrooms all his life. After a period as manager of Mr. W. L. Chamberlin's farm at Oxted (much extended since and completely rebuilt by the MGA Chairman, G. W. Baker, and A. D. Jones), Mr. Noble, lacking capital, talked it over with Harry F. Atkins, the well-known machine-tool consultant whom he had known in earlier years. Thus Noble Mushrooms Ltd. came about.

The first compost cropped for 18 weeks and produced 4 lb. to the sq. ft., most of the mushrooms being prepacked in cellophane-windowed cartons—19 years ago! Growers will not be surprised that this yield was not maintained. Site contamination in this instance took the form of *Verticillium* and Fred. Atkins accepted his father's invitation to investigate the disease and to relieve Ben Noble of routine administration and marketing.

Apart from *Verticillium* and the barbed-wire atmosphere surrounding growers and their secrets before the Second World War, these were difficult times for Noble Mushrooms Ltd. A born grower, Noble would not have been human not to have felt some anxiety over the arrival of " the Guvnor's son " with his naive notions. And young Atkins, with that passion of his for factual tidiness which I well remember from the days when we were journalists together, was wonderfully frustrated—to use his own phrase—by Noble's doing this one day and that the other, simply because he felt instinctively it should be done. But together they conquered *Verticillium* and developed a mutual respect which has served the company well. And the subsequent success of this farm suggests that a team of this nature may have advantages. A well-known grower told me in my early days with the MGA that " there is a good deal more to mushroom growing nowadays than growing mushrooms," and many growers I meet can have little time or energy left at the end of a working day.

I asked Atkins what happened next. " For some years I divided my days between the farm and the desk, and developed a deplorable habit of studying and writing at home in the evenings," he replied. " It was an admirable apprenticeship I served under Noble, and I believe he learnt something too from having to find answers to a score of questions posed daily over a number of years."

" In due course I was asked to join the Board of Directors, so he could not have been too displeased with my efforts. That wonderful foundation of practical knowledge he gave so patiently has been of immense value to me ever since, and I am glad of the opportunity to say thank you to him in print."

Atkins paused to drink a cup of the black NML coffee which surpasses any I found in Paris, and went on: " It was about this time that I received a formidable wad of a letter from some fellow growing near Selby, suggesting a meeting to discuss such problems as the cause of rhizomorph initiation, or some such term. I had no idea what he meant, and every page was so flushed with apparent erudition that I passed out. He's still growing, I understand . . . "

To return to the story of Noble and Atkins, each was a stimulant

to the other, and each a brake. One example of how this tension operates will suffice to show its value to the concern.

The Yaxley Research Station, to which incidentally Noble Mushrooms Ltd. contributed £2,500, was having some success with peat as a casing material. Within twelve months of the Open Day at which this information was revealed, about half the growers in Great Britain had gone over to peat. Not so Noble Mushrooms Ltd. One small-scale plot was put down and did well. Then half a house was cased with peat and gave a much better yield than the local subsoil. The stimulus to switch over to peat was there, for it would also conserve labour spent on digging soil; but so was the brake of caution.

An extensive series of trials was planned. Compost was prepared in sufficient quantity to fill two houses at a time. One of each pair of houses was cased with peat, and the other cased with subsoil as a " control." By this means two major variables were virtually eliminated: the composts were more or less identical, and so was the weather (which Atkins's paper at the recent International Conference proved could exert a definite influence).

These " controlled " trials were continued for twelve months so as to embrace all seasons. It was found that at one period of the year the peat-cased houses were superior to those cased with subsoil; at another period they were not as good. Why? The Atkins/Noble partnership is working on that problem to-day.

Most growers keep some records of their yields. Some keep detailed records of what they did to get those yields. A few attempt to analyse

Many people hold the opinion that Noble Mushrooms "do something extra" when making synthetic compost. "Not so" says Fred. C. Atkins, Chairman and Technical Director of the Company "We stick absolutely to the MRA formula". Here, with M. C. Luxmoore (Snowcap Mushrooms Ltd.) on the extreme left and Fred. C. Atkins, synthetic compost is in the making.

what they did. It is partly a matter of inclination but mostly a question of time. Records and their analyses are the very bases of operations at Noble Mushrooms Ltd.

A remark made during our talk was interesting: " Growers with no aptitude for simple mathematics might be disconcerted to learn what their production could be, compared with what it is, simply by an adjustment of their cropping period."

Noble Mushrooms Ltd. grows on shelves "because the farm is designed for shelf growing and does not easily lend itself to the Tray System."

I asked Atkins if he agreed with Middlebrook's contention that a farm must be large before trays can be more economical than shelves. Atkins replied: " Indeed I do. You must appreciate that one who is so persistently and consistently wrong cannot by the nature of things *always* be wrong!"

They have used MRA synthetic compost exclusively for the past five years " because it is immeasurably more consistent in its ingredients than horse-manure could ever be and, put at its lowest, gives hope for a standardised composting procedure. Horse manure is on the way out, and while others buy it because it is cheaper, and then spend more than the balance on nitrogen supplementation, we are gaining years of valuable experience while market prices are favourable."

Casing material was the subject of this discussion between Ben Noble and M. C. Luxmoore. There was certainly a fine showing of mushrooms as well.

They compost for three weeks, using the peak heat merely to pasteurize and kill off pests. They spawn three or four days after filling the beds, case fourteen days later, start picking in five weeks from filling, and empty after seven-to-eight weeks' picking. Their target is 8 lb. per sq. ft. p.a., and they plan to reach it before the Company comes of age in 1958.

Plan, mark you; not hope! And plans made by Fred. Atkins have a habit of maturing—a fact for which the Mushroom Industry has cause to be thankful.

Incidentally, another milestone was reached on 25th July; when Harry F. Atkins retired from the Board of Noble Mushrooms Ltd., Fred. C. Atkins was appointed Chairman. and B. A. Noble was confirmed in his office as Managing Director.

Is there any secret about the way Noble Mushrooms make synthetic compost? Not at all, for they stick absolutely to the MRA formula.

Continued on page 287

THE USE OF POULTRY MANURE IN MUSHROOM COMPOSTS

By Dr. R. L. EDWARDS

Poultry manure has been extensively used since the War to boost racing stable manure. Much of it has been used in the dried form, which is bagged and can be stored on the grower's farm, for use when required. This is an excellent booster with good heating properties, although not particularly cheap relative to its nitrogen content, and most activators are used mainly to supply nitrogen.

More recently the introduction of the deep litter system has produced a new form of poultry manure containing a substantial but variable proportion of the litter used. This may be peat, chopped straw, wood shavings, sawdust or mixtures of these. With such a variable material it is quite impossible to lay down a general method of using it; on the other hand it would be possible for the individual grower to work out a method if he can ensure that his particular supply of deep litter is consistent in quality. This means that the litter used should be the same, the period of use and frequency of " topping up " with fresh litter should be the same, and the same number of hens should be kept per bale of peat or whatever litter is used. There is one more serious difficulty associated with the use of deep litter, and that is the seasonal nature of the supply. Deep litter houses are normally emptied once a year and so the mushroom grower must either store a large part of the litter, with the probability of losing much of its value, or use it only in composts made in the short period when it is available fresh. In this case the work involved in finding a satisfactory use for it would only be of benefit for that short period, and it might not be considered worth while.

Any use of deep litter must in the first place be based on either a chemical analysis or on sheer guesswork to decide how much to use. In the latter case several crops will probably have to be grown before an approximately correct amount is found, some of the trials being probable losers, and it will be much cheaper to take a sample from a well mixed batch of the litter and have it analysed. Armed with the analysis, quantities can be worked out to fortify light manure. Alternatively on an experimental basis it could be balanced up with fertilisers to make a compost from straw, but results by this method would be rather more doubtful.

Poultry manure from laying batteries is much easier to use because there are no complications with bedding material and it is available over a long period if not all the year round. It can be used in similar ways to the deep litter, and with a reasonable certainty that the composition will not vary, so it is not much trouble to get organised to use it.

PREPACKING SURVEY

TREMENDOUS INCREASE IN RECENT MONTHS

By **A. D. J. Brooks***

The rapid growth of prepacking in Britain in recent months is sometimes not fully appreciated by the horticulturists. The Produce Prepackaging Development Association announced recently that it was estimated over 4 million prepacks were being sold in the course of a month, and it is of interest to compare this with the figure of $2\frac{1}{2}$ million a month at the end of last year and 100,000 in the whole of the year ending December, 1954.

This poses the question: is the mushroom grower keeping pace with the latest trends in horticultural marketing? Well-known firms like Farmers and Growers Industries and Noble Mushrooms have been prepacking for some time. So has Major Dredge, of Sevenoaks, Kent, and A. G. Linfield Ltd., Thakeham, Sussex. There is no doubt that many other growers are watching the development with keen interest.

There is little doubt that the mushroom is one of the best "bets" for prepacking as far as horticultural produce is concerned. The advantages of the sale of mushrooms in suitable prepacks can be simply stated:

(1) Greater protection;

(2) Prolongation of shelf life (when the right type of package is used);

(3) Less wastage;

(4) More economical distribution at lower cost;

(5) Better sales propaganda, especially with a well-designed pack;

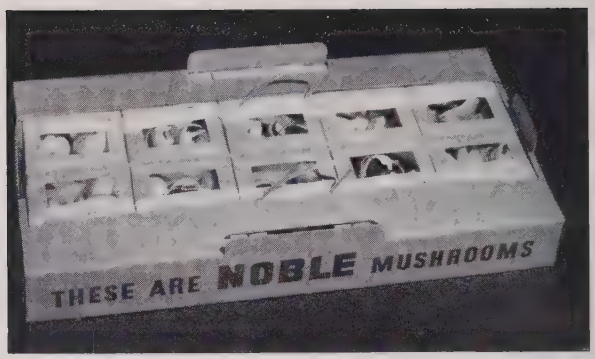
(6) More selling points, the grocer and certainly the self-service store will find handling prepacked mushrooms a simple matter;

(7) The convenience of the $\frac{1}{4}$ or $\frac{1}{2}$ lb. units which encourages the housewife to buy;

(8) The fact that the price to the consumer for prepacked mushrooms need not exceed that of the loose product.

The first question the grower will ask is what about the on-cost of prepacking? This, of course, varies to some extent with the type of wrapping material used. A fairly accurate guide to include overheads, labour and so on would be 9d. a lb., but the grower need not be afraid of this. In the case of a retailer, for instance, selling loose mushrooms at 6/- a lb., it is scarcely likely that the grower marketing through the normal channels will receive more than 4/-, but at one well-known chain of self-service stores selling prepacked mushrooms at 6/- a lb. the buying price paid direct to the grower is 5/-, or roughly 16% up. Thus, the 9d. cost of prepacking is quite easily absorbed by the reduced cost for distribution. There may be an increase in freight charges if he plans to deliver to a number of smaller retail outlets as opposed to the depot of one of the "chains," however.

There are several designs of cartons eminently suitable for use in mushroom prepacking. The two main types are the window carton



The latest type of prepack put out by Noble Mushrooms Ltd., Yaxley. Note the rather neat handle for ease of carrying. Noble Mushrooms have been marketing pre-packed mushrooms since 1938.

and the open topped carton or tray. Tests on the most suitable type of film were carried out by P.P.D.A. in collaboration with D.S.I.R. (Department of Scientific and Industrial Research), and it was found that cellulose acetate film produced very satisfactory results.

The mushrooms should be brushed with a very soft brush and the stalks trimmed to $\frac{1}{4}''$ maximum. Packing should be done very quickly to avoid moisture loss.

Recently, there have been developments in machinery which give the mushroom grower who wishes to prepack the choice of using fully automatic or semi-automatic machines, and makes possible the wrapping of various types of cartons.

There is the Forgrove L.F.A. (a highly efficient machine), and following extensive research by British Celanese, a semi-automatic machine is now available and is able to handle 12-15 wrapped cartons a minute. It is made under licence for British Celanese by Design and Installation Ltd.

It is true, too, that the grower can pack by hand, but the use of at least semi-automatic machinery is advised. Therefore, what of co-operation ? One of the major difficulties in the industry is that the mushroom farms are fairly scattered, but nevertheless co-operative packing is highly desirable. It overcomes the small growers' difficulty in meeting the constant demand from the shops, particularly in the case of mushrooms where the daily production rate may vary considerably. The packing station offers the obvious advantage of large scale production, mechanisation and, of course, economies in distribution, and enables a greater volume to be directed to the most beneficial points of sale.

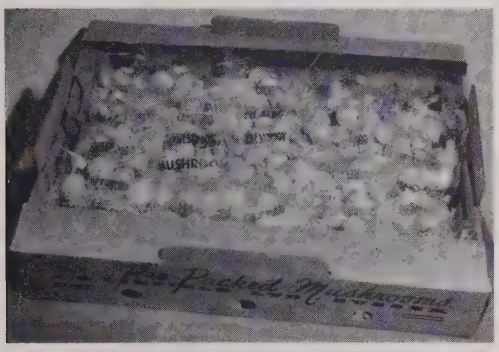
Far too few mushrooms are bought by the housewives in this country. There is no doubt that this market is capable of tremendous expansion—the easiest way to catch the eye of the buyer is by presenting the produce in attractive convenient packages which, in fact, also maintain freshness and prevent damage.

The complete over-wrapping of mushroom cartons is an effective control of the rate of transmission of moisture vapour and has a very

marked effect in arresting weight loss. This is an important consideration to the grower ; the loss can be as high in marketed mushrooms as about 10% on the second or third day period of distribution, but by over-wrapping this is reduced to a figure of about 2%, given the same conditions. The major factor is economy in distribution, and the fact that the retailer knows that if he asks for x lb. he will get x lb. is reflected in the prices offered for the prepacks by the more reputable stores.

The prepack opens new selling points ; the family grocer, the self-service store and the supermarket present an opportunity to increase the overall sales of mushrooms in a way which would astonish the average grower marketing through traditional channels.

The Produce Prepackaging Development Association was formed under the aegis of the National Farmers' Union in August, 1954. There was a handful of founder members who included film manufacturers; in step with the demand for prepacks to-day the Association has over 70 members. It has its own technical department and marketing department to assist with the growers' and shopkeepers' problems, and is available for consultation on problems affecting the industry. It publishes its own magazine, " PRODUCE PACKAGING," which is available to non-members.



A new type of mushroom prepack—in six ounce acetate bags—which is now appearing in the shops. It is produced by Messrs. A. G. Linfield Ltd., of Chesswood Nurseries, Thakeham, and is on the American pattern, following intensive market research.

One of the main emphasis the Association has placed in its propaganda has been " quality first." This is the slogan with which the majority of mushroom growers are familiar, but it may be said it is through prepacking that they may ensure that their products reach the housewife in the fresh, clean and " quality " condition that they left the farm.

* Editor of " PRODUCE PACKAGING," Hans Crescent, Knightsbridge.

NOBLE MUSHROOMS LTD. *Continued from page 283.*

The straw bales are thoroughly saturated in a special building, are then broken and passed through a Robust chopper and so to stacking, Activator 1 being added then. The compost is turned three times at intervals of seven days, Activator 2 being added at the final turn. The pile heats up to 160-170 degrees and once a house is filled the beds are heated up to 130° F.

What about 10 lb. per sq. ft. p.a. on shelves! Atkins said, just before I left: "We are slowly stepping up to four crops a year and hope to hold that 2½ lb. per foot." Well, the day's pick when I was there was 2,300 lb. and that's useful enough from a 34,000 sq. ft. farm. WRA

122. A gunman with a 12-bore lay in a meadow all night waiting to shoot the early bird for the evening meal. He got no bird but his experience is worth recording. Half way through the night he was wakened out of a doze by a loud " pop." He could find no explanation but he noticed that a mushroom was growing by his side that had not been there before. He was brought out of a second doze by another " pop." Again no apparent cause, but yet another mushroom had appeared from nowhere. He concluded that he'd discovered the origin of the phrase " Mushrooms pop up in a night." He told his friends. So far the story is true, but what we don't know is whether both his cartridges had been fired. A grower, hearing the story and anxious to improve his cropping, sat up all night in a mushroom house but neither heard a " pop " nor saw a single mushroom appear, in spite of the fact that he was carrying a sub-machine gun.

123. There are times in mushroom growing when you just can't go wrong—seriously wrong, I mean. There are others when you can do nothing right. We would like some explanation of this but there's no one to supply it. So we flounder on. On the face of it we are more concerned with the things that go wrong than those that go well, but really I think we should worry more about the latter. I would rather know why certain areas do exceptionally well than why others don't produce at all. In other words I would prefer to look at the positive, optimistic side than spend my life worrying about discouragements. Our business after all is to *grow* mushrooms not to try to find out why they *don't* grow. I have noticed with some amusement that the pocket magnifier class of people who visit me always concentrate on the non-producing areas. I would like them to pay more attention to those areas (if any!) where there is a full crop of good quality, clean mushrooms. Besides being more positive, that approach is more cheerful.

124. Truffle is with us again, in some four houses at time of emptying. Cecids, after a well-earned holiday, are rearing their ugly heads again too, though I think we can master them this time.

125. Here's another idea which the wise boys may claim as a novel approach in 10 years' time. I suggest the better the compost material (nitrogen, etc., content) the shorter the composting time required for the best crop. In other words, the more we boost a stable manure the quicker should be its composting time. Thus short-composting a poor material may be useless; long-composting an extra good one (with higher nitrogen, etc., content or with readier nitrogen availability) might lead to release of an excess of ammonia to the point where spawn just won't run. Might? Indeed there's no doubt about it, as I've found to my cost. I don't know how this works out with synthetic compost nor, I'll wager, does anyone else. In 1949 the MRA experimented with compost *times* on a uniform material. Later they tested *various activators*

but gave them all the same composting time. Later still they short-composted with Urea at two time levels, 8 and 13 days, and while they found 13 days to be better we don't know how the picture would have looked if they had used different levels of Urea. As far as I can discover they didn't ever combine both experiments (it would have been a colossal job requiring several years) to find out the best composting time for various activators and nitrogen, etc., levels. As an example of what I'm getting at, when we tried extra heavy boosts we found an over-production of ammonia with normal or longer than normal compost times (seriously minimising spawn run and crop) and in despair tried one at an unusually short time. It was the only good crop, beating all the others by well over 1 lb. per sq. ft. It may be that availability is equally important and that Urea, for instance, which is regarded as a dangerous supplement on account of its exceptionally rapid release of ammonia in normal composting time making it virtually impossible for men to work, could be useful if composted very quickly. Say, perhaps three turns in three days then into the house for peak heat. An exaggeration? Maybe; but, as I say, who knows?

126. We have a test bed of a particular " brown " spawn. The mushrooms are of perfect shape and size and produce heavily. Yet I can only get 2/- lb. for them, and they would have to do something like 5 lb. per sq. ft. to equal the profit of the average " white " crop. I shall grow no more, but I would like to know why whites can't be made to crop as well and as long as browns. The " life " of a white crop seems to be going down very rapidly. I wonder if there is a reason, and if the spawnmakers could supply it.

127. Out of five large-scale—house-size—tests of sterilized v. unsterilized peat none has shown an advantage with *un*sterilized. The extra yields from sterilized have varied from 1% to 18% with an average of 7%. But that isn't the whole story. There is a distinct saving of labour on peat preparation, as the wetting process is simplified. Peat is put into large steam bins, up to 1 ton at a time, and heavily hose-piped, then steamed until every bit of the surface is done. It seems to come out of the bins in a ready-for-casing state, and cuts out all manual or machine mixing and watering. But that again isn't the whole story. As a result of steaming we have found a great reduction in pitting and other unwanted markings of the mushroom towards the end of the crop. So in all we save labour, get a cleaner crop, and a sufficiently improved yield to pay for the sterilizing fuel. A final note: Don't try this on my statement only, because there are those who tell us that sterilizing peat is dangerous. Don't blame me if you get every known disease and no mushrooms. I only tell you what happens here at Brayton.

128. Against all advice we have put a synthetic compost into our much-maligned small triangles at its third turn. Our description of the resulting crop will probably not be permitted in print!

129. Dr. Ronald L. Edwards, Mr. Fred. C. Atkins, and (apparently) all officialdom have me in hot water again. Dr. Ronald warns me to weigh my words more when I write " in ignorance and mis-understanding " of trays, scientists, and research. He would be " very

annoyed " if he thought I really mean what I write. *Dear Doctor, with the interests of the grower and the industry at heart I* **do** *mean what I write: be as annoyed as you please.* Fred. C. Atkins complains that I hit too hard and hurt people, " with the gloves off " is his phrase; what I say may be true, he agrees; but I gather I must say it gently, and reverently, or not at all. Officialdom, research scientists and the rest apparently lie flat on their backs, whipped to prostration by the lashing strokes of my pen. Well, boys one and all, if you want honesty and the truth as it applies to me and in my view to growers generally, you must be prepared to take it. If you prefer a slimy, toadying humility and a greasy pandering to the infallibility of your presumed superiority you won't get it from me. The grower—the practical man—is not the totally ignorant fool you think; he somehow produces the final goods, almost unaided. There I go again. Nasty, biting, hurting, harsh, objectionable phrases. Perhaps I *should* calm down a little. Perhaps . . . (on the best authority the following should hurt no one) . . .

Don't let's be beastly to the Scientists,
Don't let's be beastly to our Ron,
Don't let's be beastly to Fred. Atkins,
When loud they chorus, " Stanley, 'ave yer done?"

130. Nothing to do with mushrooms. I like the story of the pedestrian who sued a motorist for knocking him down and seriously hurting his leg. When asked in court if he would demonstrate the extent of the damage he proceeded to limp across the room dragging his leg. Counsel for the Defence: "Could you now show us what you were like before the accident?" The man walked smartly across the room. Case dismissed.

APOLOGY

The Editor apologises to either Michel Loyant or Heltay Imre, or both these gentlemen. Memory, or the excellence of Monsieur Dialand's wines, may have been the cause for his stating that the photograph of the Frenchman was one of the Hungarian. See page 256 of August Bulletin 80. (George Guilbaud, of Royal Champignon fame, is on the extreme right).

CORRESPONDENCE

Is this a record ?

I recently filled a shelf house, dusted the beds with a modern insecticide, closed it and peak-heated. Air and bed temperatures rose above 120° F., and smoke generators claimed to be highly lethal were then discharged. The shelf boards and structure had all been washed with a standard disinfectant. After cooling I went to remove a bed thermometer preparatory to spawning and found a mite running up the stem.

What's the use ?

F. E. Dup.

THOUGHTS ON COMPOSTING

"Quot Homines, Tot Sententiae"—*

and the Latin tag was never truer than when applied to mushroom growers and their methods of composting! From the ultra-short brigade, through the two-phase gentlemen to those who stick to traditional methods there is almost infinite variety in such matters as numbers of turns, period between turns, length of peak heat, temperature and so on. There are variations on a theme such as the triangle men, those who extol the virtues of the split lump, and more recently, the 'no-composting-at-all' school of thought. All these earnest seekers after truth pursue the same goal—more pounds of mushrooms per unit of input.

It is a good thing that in such a divided world they have *one* factor upon which they can rely, no matter what method of composting they follow. Whether the medium is short or long, DARLINGTON'S 100% SPAWN will give consistently good results.

* "*There are as many opinions as there are men.*"

For Short or Long Composting

DARLINGTON'S
REGD.

100%

PRODUCTIVE PURE CULTURE

MUSHROOM SPAWN

Gives the best results

MGA PUBLICITY SCHEME

Both the Executive Committee and the Publicity Sub-Committee acknowledge with pleasure the following contributions to the Publicity Fund. All concerned on the MGA side of this effort are gratified at the fact that, in the case of many contributors, it is an expression of renewed support and confidence in the efforts being made by the Association to further publicise the cultivated mushroom.

	£	s.	d.
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The Cowling Group, Salesmen, Kirkgate Market, Leeds	10	0	0
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*The amounts collected by Spawn Merchants are not for publication.
†Previous contributions already acknowledged.

LATEST PUBLICITY CONTRIBUTIONS—AUGUST

*W. Darlington & Sons Ltd., Sundriesmen, Southport Road, Worthing			
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Wm. Artindale & Son Ltd., Salesmen, Castlefolds Market, Sheffield ..	20	0	0

MOUNT MUSHROOM SPAWN

Gore Lane, Gorefield,
Nr. Wisbech, Cambs.

J. E. R. Simons Ltd.,
Harlow,
Essex.

8th August, 1956.

Dear Sirs,

Please find enclosed photograph of mushroom crop, also record card to date 31.7.56. The area of sq. ft. being 1,800, you can see it has produced over 2 lbs. per square foot in 30 days. The quality of mushroom has been extremely good, and I can assure you that no mushroom has been cut with any long stalks to make weight.

Yours faithfully,

Sgd. W. Sleight.

RELY ON —— THE BEST

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Distributors : J. E. R. SIMONS LTD., HARLOW, Essex
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A NEW BEGINNING AND AN OLD METHOD

By W. DUNBAR

I had the alternative of either getting another similar job or starting something on my own account. With only a limited amount of capital but with something which money cannot buy, i.e., 25 years or more practical growing behind me, the decision was rather difficult. However, during my search for suitable premises to rent—an extremely difficult matter indeed—Nottington Lane, Nr. Weymouth, became available.

Another decision then had to be made, i.e., what form of growing was most suitable both to the place and my finances.

Having divided my growing experience roughly into all three systems of growing the decision was extremely difficult. The tray system of intensive growing required more capital outlay than I had available, for the equipment to do the job properly was far too costly for me. I would have to have peak heat houses and trays and a considerable amount of roller conveyors. There are three floors here (two in use), each 100 ft. by 25 ft. but with 18 in. walls. These would again have to be sub-divided and altogether the cost both of materials and labour would have been far more than I could afford.

The next method was shelves and having a fair knowledge of the cost and amount of labour and materials for buildings of this size involved, this plan again was rejected.

A further consideration of both these plans was quality of the finished article.

Over the last few years I have come to the firm conclusion, rightly or wrongly, that the whole of the industry has had its policy shaped along the lines of speed of production and has eventually arrived at a situation which I could only compare with the animal world—as inbred.

We have, in my opinion, created for ourselves a position entirely devoted to the production of large quantities of small mushrooms, with far less taste and hardihood (for want of a better word) than ever we intended. We have also, by such intensive growing, considerably increased our own problems. Especially as to diseases and pests. In consequence, we have provided the sundriesmen and scientists with more work and business than they imagined possible in the early days.

Having made these decisions I had then to pursue the line of growing best suited to my means and the one which commended itself most, as the cheapest and best from the point of view of making a living, was a cross between the old-fashioned ridge and flat beds.

Manure was then ordered and by virtue again of a certain amount of experience 40 tons was the estimated quantity—20 tons for each floor. This duly arrived and I must say that with only the help of one man who had never seen so much manure before the compost piles were made, one on each floor, and I was almost overwhelmed. Fortunately there was available a very good water supply and practically all the necessary water was added at the time of stacking.

Since all the doors were too narrow to admit a composting machine the whole composting process was done by hand and in the final analysis a thoroughly good job was accomplished. As a means of reducing weight —to anyone so afflicted—I can throughly recommend this method. I lost 25 lb. in weight!

Thirty lb. of Shirley Activator was used per ton of dry manure on the first turn and 20 lb. gypsum on the second, with whatever adjustment of moisture being carried out on the first turn. The timing of the turns was six days, six days and five days, and on the last turn I added lindane as an insecticide, 3 lb. per ton of manure.

On the 19th day the beds were made up and they retained their temperatures of 135° F. for four days during which time they were again well powdered with lindane dust.

I spawned at 80° F. on the ninth day after making up and 16 days later cased with local soil. Mushrooms duly appeared in 32 days after spawning and I commenced picking 6 days later.

I have been picking now just over a month and the crops are producing extremely well.

A very fair proportion of my production is sold locally and the average price for around 600 lb. per week was 3/9 per lb. net.

Looking back over the past years the conclusions I can draw are that (1) being able to manage very easily with one man to help, the labour costs are cut to the minimum, (2) there is no expensive equipment to keep up and (3) with the aid of a very good building so far as insulation is concerned a very satisfactory product which commands an extremely useful price is produced.

There is to my mind no doubt that the place could easily produce a great many more mushrooms than it does, by installing either shelves or trays but I also firmly believe that then trouble would start. I am quite satisfied with the figures produced by various growers as reported in the Bulletin from time to time, that 250 to 300 lb. per ton of manure this way can and will produce a quiet living in a small way with the least amount of trouble and expense.

DEVELOPMENTS IN HOLLAND

Dr. P. J. Bels, recently returned to Holland, sends us the following note as a supplement to the article on Dutch Air-Conditioned Houses which was published in our July Bulletin No. 79.

In 1950 there were three air-conditioned mushrooms houses in Holland. In 1952 there were 15. It was then that we left for Canada. On our return this year we find, to our great surprise, the July figures are 178 in Holland and 3 in Germany.

About every week another house is added or a grower inquires at the Institute for Horticultural Engineering (Wageningen) about building one. The Institute is continuously striving to improve the houses and to investigate the possibility of lowering the cost of building. There are slight differences in the houses, but they all operate according to the same principle: air-circulation in a well-insulated and "air-tight" building.

Some more information:

From 1947-1956, 18 short-courses on mushroom-cultivation were given by: Miss E. J. G. M. de Kleermaeker, Mr. G. J. Baron van Boetzelaer, Dr. H. C. Bels-Koning, Dr. P. J. Bels, with the following results:

Number of growers in Holland:

1947 approx. 30
1952 „ 60
1956 „ 228

Mushroom production in Holland:

Year	Caves	Mushroom Houses	Total
1940	—	—	66,000 lb.
1942	70,000 lb.	70,000 lb.	140,000 lb.
1947	—	—	330,000 lb.
1950	440,000	110,000	550,000 lb.
1952	—	—	660,000 lb.
1955	440,000	1,760,000	2,200,000 lb.

BROWN FROM WHITE?—NO!

At a hearing in the High Court, Wiesbaden, recently, Mr. R. C. Darlington of Hastingwood, Harlow, Essex, successfully submitted that diseased spawn of the white variety of mushrooms would not, because of the disease, produce mushrooms of the brown strain. Mr. Darlington agreed that such a theory had been expounded by limited scientific opinion but, he said, in practice, there had been no evidence whatsoever to support this.

SOBEXAS

SOBEXAS

Whichever way you look at it
Sobexas mushroom spawn
meets the exacting demands
of the industry

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CONDITIONS AND SEASONAL TEMPERATURES

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HERTFORD ROAD, WALTHAM CROSS, HERTS.
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FAIRFIELD'S MUSHROOM PLANS

G. F. Sheard, Director of the Fairfield Experimental Horticulture Station near Preston, Lancashire, was asked by the Bulletin to give us his latest mushroom news. He writes:

" Our Station Advisory Committee has approved the erection of a mushroom unit, consisting of two houses each 40′ × 18′ and a Manure or Compost shed. These will be brick built with foamed slag lining with timber portal principles, corrugated asbestos roofs lined with glass wool and asbestos insulating board. They conform very closely to the specification prepared by Dr. Edwards and are similar in construction to rhubarb forcing sheds which have been erected at Cawood. They should give us an extremely good insulating value with a " U " value for the roof of 0.10 and for the walls of 0.25 and we are expecting to be able to erect them complete, for about £5 15s. 0d. cost per square yard on plan.

[Mr. F. G. Smith (left) director of Stockbridge House Experimental Horticultural Station, Cawood, Selby, Yorks., and Mr. G. F. Sheard.

" We are, at present, awaiting Treasury authority for the money but there seems every hope that we shall be able to start building in the Autumn and start experimental work during the Spring.

" Our first crop will be used to calibrate the houses and to determine any positional effects of experimental plots. As soon as this is complete, we propose to carry out replicated experiments on the use of different casing materials."

EASTBOURNE EXHIBITION

A provisional programme in connection with the annual Mushroom Industry Exhibition at Eastbourne, on 14th and 15th November, is printed herewith.

A new departure is the dinner-dance to be held on the evening of 14th November, at The Grand Hotel. For this event dress will be informal but dark suits will probably be worn by the majority of gentlemen.

A full list of Eastbourne Hotels has already been circulated to all members who are again reminded that The Grand Hotel will be the

MGA Headquarters throughout the Exhibition period. Members are asked to make their own hotel reservations, with the exception of the members of the Executive Committee for whom a block reservation has already been made.

PROVISIONAL PROGRAMME

Tuesday, 13th November

9 p.m.	MGA Members " meet " Grand Hotel to talk Mushrooms, buy other members drinks and entertain the ladies.

Wednesday, 14th November

10 a.m.—6 p.m.	Mushroom Industry Exhibition. Winter Garden.
2 p.m.	Judging Mushroom Competitions.
2.30 p.m.—4 p.m.	Lecture Session. Winter Garden.
7 p.m. for 7.30 p.m.	Chairman's Reception -Conference Dinner and Dance. Results and Presentation of Cups by the Mayor. Grand Hotel.

Thursday, 15th November

10 a.m.—6 p.m.	Mushroom Industry Exhibition.
2.30 p.m.	Lecture Session. Winter Garden.
5 p.m.	Exhibitors' Meeting.

Cookery Demonstrations—both days—Winter Garden.
Films of Mushroom Growing—both days—Winter Garden.

CORRESPONDENCE

As a grower paying his humble 2d. per carton to the MGA Publicity Fund through the kind channels of the Spawn Distributors, I think a word of thanks is long overdue to our Executive Committee for their foresight in inaugurating the scheme and a jolly good pat on the back to the members of the Publicity Sub-Committee who do all the work voluntarily on our behalf as well as paying their twopences.

I think I am right in saying the idea of the scheme is to increase the demand for Mushrooms and educate the housewife in making far better use of our product to improve numerous dishes. The increased demand will enable us to increase our production by enlarging our farms and improving our growing methods, knowing a market awaits our crop. We should produce more economically and therefore benefit without driving up the price. I for one would not wish to see mushrooms priced above the reach of the average housewife.

The work of our Committee is having a great effect and the public are certainly becoming increasingly Mushroom minded.

Below I give actual facts which show that the publicity given to Mushrooms has enabled a greatly increased output to find a ready market at a slightly firmer price and I for one have had far more than my 2d. per carton back.

1955. April 1st—July 31st.	Marketed 28,610 lb.
	Nett Market Return £4,007.
1956. April 1st—July 31st.	Marketed 49,707 lb.
	Nett Market Return £7,854.

So that I am not inundated with letters inquiring the markets and wholesalers I use, I must remain anonymous.

"A Satisfied Member."

OPEN LETTER TO MR. MIDDLEBROOK

Dear Mr. Pinhead,

I always read your Diary first . . . . . .

It was disconcerting to us both during the memorable Linfield Farm Walk to learn that many growers were surprised to find we were still the best of friends. Since then I have been wondering why it should be thought that we might no longer be on the best of terms. The answer, shocking as it is, can only be that some people *do* believe what you say, as Edwards has suggested.

You're a man of many parts, and they don't easily fit together. Your record in the recent emancipation of the Mushroom Industry in this country, your real generosity towards the Yaxley Research Station, your undoubted skill as a grower, the penetration of your endless argumentation—all contrive a very curious background for the light-hearted buffoonery of your swashbuckling championship of what you pretend is the Ordinary Man in his Struggle against Progress.

There are moments when, to some, you must resemble the old Professor in Bleak House who, his mind wandering, insisted on keeping a little hammer under his pillow for use against anyone who approached his bed. But I know it isn't really a hammer; it's a Fool's Bladder.

I insist on it. And that's why I am sorry to read that you're now declaring in such unequivocal tones that you mean just what you say. It would almost seem that, having been compelled in decent privacy to swallow a little of your own publicly-distributed medicine, you are, if not actually disgruntled, at any rate far from being gruntled.

That's P. G. Wodehouse, of course; I have quoted it to you before. And I cannot resist reminding you of something by Oscar Wilde, which might almost have been written with your Pinheads in mind: "On an occasion of this kind it becomes more than a moral duty to speak one's mind; it becomes a pleasure."

You couldn't write as you do unless you enjoyed it; and I steadfastly refuse to believe you when you say you mean what you say. It would be a sad day for me if I had to take down this Lewis Carroll picture of you as you re-enter our columns each month:

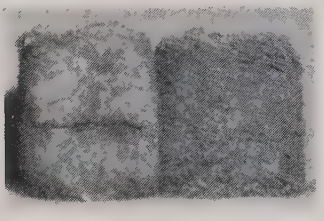
The Middlebrook, with eye of flame,
Came whiffling through the tulgey wood
And burbled as he came.

Yours affectionately,

F.C.A.

SEEN THIS!

NEW TYPE OF SPAWN



Pictured above is a new type of double-purpose spawn which it is claimed by the producers, Messrs. R. C. Darlington Ltd., represents a new departure in spawn production. It is claimed that this spawn, termed Needle spawn has an entirely new base quite unlike manure or grain spawn. It is said to have given most satisfactory results on trials in England, Ireland and Germany. It can be used either like manure spawn or broken down finely and spread like grain spawn.

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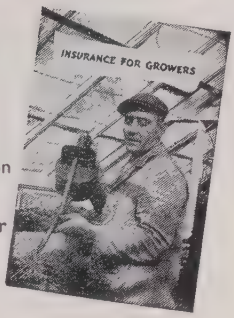

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Tib. 204

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Designed after consultations with growers, wholesalers and retailers, the Dring Mushroom basket embodies lightness, ease of stacking, rigidity and, above all, the wax impregnated board from which they are made *absolutely eliminates the possibility of the mushrooms being spoiled through the basket absorbing moisture.*

DON'T DELAY ORDER NOW!

DRING

at the lowest cost of any basket in use today

Dringport Works, The Airport, Portsmouth, Hants

MUSHROOM GROWING TO-DAY*

By FRED. C. ATKINS

3rd. Ed. Faber 21/-

This well-known book, now six years old, has been revised and re-arranged for the second time, an indication both of progress in the industry and of the author's and publishers' intention to keep it up to date.

For those unfamiliar with earlier editions, the book gives a general description of the mushroom as an organism, a brief history of mushroom growing and a review of the position to-day, here and abroad. Then there are chapters describing in great detail the buildings and equipment recommended for mushroom growing. The orthodox methods of preparing horse manure and synthetic composts are fully described, with an account of the objects of composting; then Lambert's, Sinden's and Middlebrook's methods of short composting are described more briefly. Peak-heating, spawns and spawning, casing soil and casing, watering and ventilation, are all dealt with in the same way, discussing the reasons for each process, outlining the possibilities and giving the author's recommendations.

The chapter on sanitation describes the safety first measures which, although some consider them superfluous, have kept Mr. Atkins' farm free from serious trouble for many years.

Major and minor diseases and pests are well described, with control measures where these are known, and references to some which are still awaiting definite proof. I should have thought that parathion would rank among the favourite insecticides for use at peak heat.

The Tray System is briefly but adequately described, with an unbiased statement of its merits and drawbacks.

There is a short section on growing as a sideline and for amateurs, giving very simple advice without minimising the difficulties.

For those who know the earlier editions it is only necessary to say that in most chapters where there have been developments these are noted, particularly short composting, peat casing, diseases and pests and their control, economics, and seasonal effects. The arrangement is also improved.

I must have said or written to hundreds of inquirers that " Mushroom Growing To-day " is the best book on the subject; having read this new edition I shall continue to do so with renewed confidence.

R. L. EDWARDS.

***Obtainable from MGA Office**

Continued from page 303

To summarise, the book gives a simple account of traditional methods of growing, with some notes for amateurs, but is unlikely to tell most commercial growers anything new.

R. L. EDWARDS.

GROWING MUSHROOMS

By ROY GENDERS

Benn 12/6

The general style of this author's previous books has seemed to me to appeal to the amateur or pin-money grower, rather than to the specialist who grows mushrooms for a living, and of course there is a demand for a book written in simple terms for such readers. If the present work only aspired to give a simple account of traditional methods of growing, with some tips for amateurs, there would be less to criticise. However, the dust cover announces that in " Growing Mushrooms " " modern secrets of the commercial grower are revealed to those who in the past have not found the cultivation of this profitable crop any too easy." I think that includes nearly all of us, but I for one looked in vain for the " modern secrets " which make mushroom growing any easier. I did find a succession of astonishing statements or opinions: the yearly output in the British Isles is possibly 10 million lb. and production appears to be falling each year; the average wholesale price in 1955, was 5s. per lb. (don't we wish it had been!); materials for 200 sq. ft. of bed producing 200 lb. of mushrooms cost approximately £5; salt (on the beds) is advised by all large growers.

It is hardly a modern secret that two crops a year are a distinct possibility; nor would some growers who have tried it agree that " it may be economical to heat your mushroom houses by electricity, thermostatically controlled "; after condemning all artificial composts in various parts of the book, a final note added " after revision was completed " says that the author has used various other activators successfully.

Apparently Mr. Genders has never heard of the Tray System, turning machines, timber preservatives for shelving, short composting, plain peat or peat and chalk casings, cecid larvae, Bacterial Pit and Blotch, Verdigris or Yellow Moulds, all well-known and surely worthy of mention.

On the positive side the book gives a simple but adequate account of the traditional composting process and other operations. Most of the common diseases and pests are described, with DDT, Gammexane, nicotine, formalin and a proprietary dust as control measures. Emphasis is rightly laid on cleanliness, ventilation and the beneficial effect of good growing conditions in control of disease. More definite advice on choice of casing soil would probably help the inexperienced readers who are most likely to find the book useful. There is a human note in the comment that those not used to turning manure will find it most tiring, and one's body will ache considerably afterwards. "A hot bath and early to bed is the only cure I know."

Proof reading was not good, figures and words are omitted, generic names of fungi are not given capitals, obviously wrong words are printed and words are omitted.

Continued on previous page

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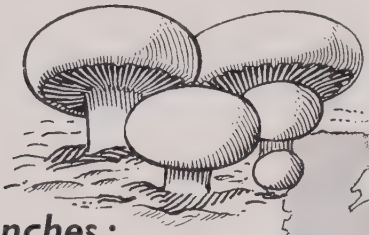

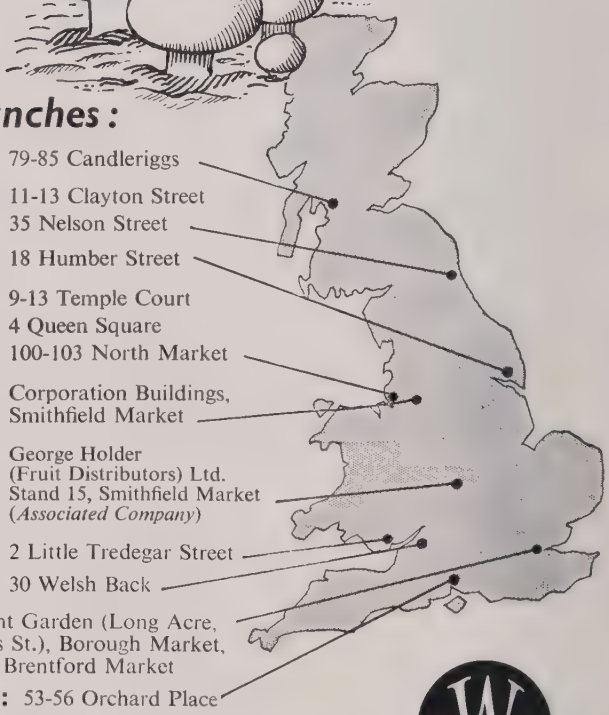

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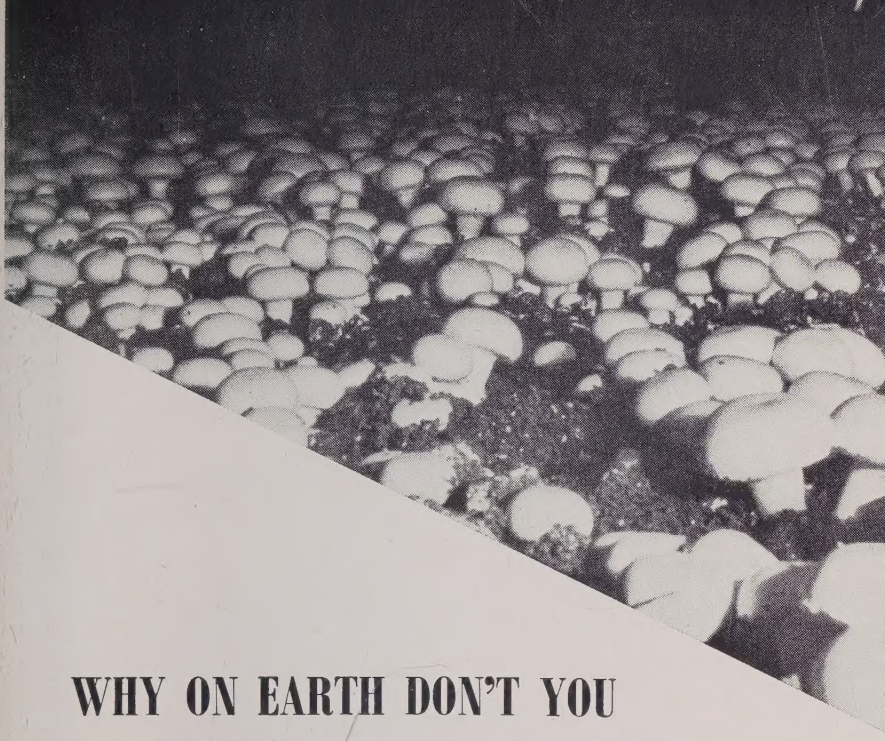

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